

HYDROLOGIC AND WATER-QUALITY DATA IN SELECTED AGRICULTURAL DRAINAGES IN BEAUFORT AND HYDE COUNTIES, NORTH CAROLINA, 1990-92

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ABSTRACT

An investigation began in 1988 to (1) quantify nutrient, sediment, and freshwater inflow in canals that collect drainage from cropland field ditches, (2) determine the effects of tide gates and flashboard risers on receiving-water quality, and (3) characterize the effects of drainage on the salinity regime of a tidal creek. Data were collected in three agricultural drainage canals in Hyde County, two agricultural drainage canals in Beaufort County, and in Campbell Creek, which receives drainage directly from the Beaufort County canals. Tide gates were tested at selected sites in Hyde County, and flashboard risers were tested at selected sites in Beaufort County.

Hydrologic and water-quality data are presented in this report for the period October 1990 through May 1992 and include (1) daily values of accumulated precipitation, (2) monthly water-level statistics, (3) daily mean values of discharge in the canals, (4) biweekly water-quality field measurements and sample analyses, (5) storm-event water-quality measurements and sample analyses, (6) continuous records of specific conductance in the canals, (7) vertical profiles of salinity in Campbell Creek, and (8) daily mean values of salinity in Campbell Creek. Data collected at these sites from May 1988 through September 1990 were published in a previous U.S. Geological Survey open-file report (Treece and Bales, 1992).

INTRODUCTION

Croplands in eastern North Carolina are typically drained by an array of small ditches that feed larger collector canals emptying into creeks or other receiving waters. Flashboard risers and tide gates are two primary types of water-control structures used in field ditches in North Carolina's coastal counties to manage this drainage. The crest elevation of flashboard risers may be changed at any time by removing or adding boards to the structure. Consequently, landowners may exert some control over drainage from ditches upstream of these structures. Tide gates, on the other hand, operate solely in response to the difference between the water levels upstream and downstream from the structure. According to the design used in the Coastal Plain, tide gates open and allow drainage from upstream fields when the upstream water level exceeds the downstream water level by more than 0.2 ft (R. Woolard, U.S. Soil Conservation Service, oral commun., 1989).